

Increasing cocaine use amongst employed Australians: who is most at-risk?

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Abstract: Australian's cocaine use is at record levels. Large increases occurred between 2016–2019, with significant increases predominately found among employed Australians. Patterns, and prevalence of workers' cocaine use were examined using the 2016 and 2019 National Drug Strategy Household Survey data via frequency analyses. Logistic regression modelling identified predictors of employed Australian's: cocaine use (2019); and increased use over time (2016–2019). Workers' cocaine use increased 63% between 2016–2019 (3.8%–6.2%). Predictors of use, and increased use, were age, marital status, state, remoteness, smoking status, alcohol use, and cocaine approval level. Income and psychological distress predicted cocaine use in 2019 only. Highest prevalence in 2019 occurred among workers who approved of regular cocaine use (47.9%), currently smoked (14.9%), were very highly distressed (14.0%), risky alcohol consumers (13.7%), and aged 18–24 years (13.9%). Numerous individual-level characteristics influence workers' cocaine use. Workplace cultural norms and substance use climates may facilitate increased cocaine use. The workplace is a powerful setting for cocaine prevention and intervention efforts. Potential strategies include targeting social norms, shifting positive drug use workplace cultures, and providing health and safety training focussing on the risk of use to self and co-workers whilst also examining demographic subgroups' motivations for use.

Key words: Illicit drug use, Epidemiology, Workforce, Cocaine, Australia

Introduction

Cocaine use in Australia is at record levels^{1,2}. In 2019, cocaine was the second most commonly used illicit drug in Australia (4.2%)¹ with similar use patterns found elsewhere^{3,4}. Australia's cocaine prevalence has doubled since 2010 (2.1%) and quadrupled since 2004 (1.0%)¹. The most

rapid increase occurred between 2016–2019 where community-wide cocaine prevalence increased 68% (2.5%–4.2%)¹. The recent growth in cocaine use however is not uniform across the population. Cocaine use among employed Australians increased significantly between 2016–2019 from 3.8% to 6.2%, with prevalence higher among employed Australians than other sections of society (0.2%–3.7%)⁵. Although other groups showed increasing use over time, none increased significantly (with the exception of those 'unable to work': 1.1%–3.5%)⁵. Reasons for workers' higher levels of use are multifaceted and warrant closer

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examination, together with assessment of the safety, health and prevention implications and scope for health promotion interventions.

Australia's increasing cocaine use is verified in wastewater data, an objective indicator of consumption. Between 2016–2020, consumption increased 86% (3,057kg–5,675kg)⁶. The increase found in wastewater is substantially larger than the self-reported increase of 68% in 2016–2019 population data, suggesting that the upward trajectory has continued from 2019. Cocaine prevention and cessation efforts to ebb increasing use are of paramount importance, particularly among employed Australians who comprise 83% of users.

Higher cocaine levels have been accompanied by increased health service utilisation, further underscoring concerns about increased use. Cocaine-related harms, and help-seeking behaviour are illustrated in higher hospitalisation and treatment utilisation rates for cocaine as the principal drug of concern, respectively⁷. Cocaine-related mortality has also increased elsewhere in-line with increasing cocaine prevalence^{3, 8, 9}.

Cocaine use can impair concentration, coordination and judgement and produce symptoms of anxiety, paranoia, exhilaration and intolerance to pain/fatigue^{10, 11}: factors of considerable relevance to workers and the workplace. Fitness for work can also be compromised as cocaine use can cause vomiting, headaches, hallucinations and delirium; and a range of cardiovascular, cerebrovascular and neurological problems^{7, 11, 12}. People who use cocaine may be a danger to others, especially if operating machinery or driving a vehicle. These risks may be particularly salient if cocaine use occurs during workhours. US drug testing data indicate that cocaine positivity rates increased by 12% between 2015–2016¹³ suggesting greater use at the workplace. Despite these concerning patterns and potential impacts on workers' health and wellbeing, workers' cocaine use has received comparatively little attention.

It is well established that general population prevalence of recent cocaine use varies by demographic factors^{5, 14}, with use more common among men, those aged 20–29 years, single, employed, metropolitan-based, and psychologically distressed⁵. Among those who use cocaine, 83% are employed. Although use of other illicit drugs has similar health impacts on users and the workplace, cocaine requires urgent attention. Cocaine is the only illicit drug whose use has grown exponentially among workers and is the second most commonly used illicit drug (after cannabis)⁵. Meanwhile, use of opioids and methamphetamine have significantly reduced, and heroin is of low prevalence

(0.1%)⁵. The decline in methamphetamine use, in particular, is predominately due to effective population-level health promotion and prevention strategies. Thus, the use of cocaine among Australian workers warrants closer investigation so that targeted strategies can be implemented. The present study therefore investigated:

- 1 What were the patterns and predictors of cocaine use among employed Australians in 2019?
- 2 What were the predictors of increased cocaine use among employed Australians between 2016–2019?

Subjects and Methods

Data source

Data was sourced from the 2016 and 2019 National Drug Strategy Household Surveys (NDSHS)^{15, 16}. The NDSHS, a cross-sectional survey undertaken every three years, measures the Australian general population's attitudes, opinions and behaviours regarding licit/illicit drugs. Each NDSHS sample (e.g., 2019) is selected using stratified, multistage random sampling. Data collected is weighted to ensure representativeness to the Australian population¹⁷. Full methodological and sampling details are available elsewhere¹⁸. Response rates were 51.1% (2016) and 49.0% (2019)¹.

Although the 2019 NDSHS collected data from 14+ year olds, no employed respondent aged 14–17 years reported past year cocaine use. Thus, eligible data were employed Australians aged 18+ years (2016: n=11,698, weighted N=10,314,859; 2019: n=11,571, weighted N=11,307,191).

Measures

Respondents who selected *self-employed or employed for wages, salary or payment in kind* to “Which of the following best describes your main current employment status?” were included. Past year cocaine use (yes; no) was determined via the Australian Institute of Health and Welfare's (AIHW) derived variable ‘RcntCoca’. RcntCoca was derived from two questions: “Have you ever used cocaine?” (‘no’: RcntCoca=no) and/or “Have you used cocaine in the last 12 months?” (‘no’: RcntCoca=no; ‘yes’: RcntCoca=yes). Note: respondents who selected ‘no’ to the first question are not asked the second question.

The demographic, health and attitudinal variables of interest were gender (male; female), age (18–24; 25–34; 35–44; 45+), marital status (single; married/default; widowed/separated/divorced), Indigeneity (Indigenous; non-Indigenous), state, remoteness, SES, income, psychological distress, smoking status (current; ex-/non-smoker), alcohol use status, and attitude towards cocaine use (“For each of

the drugs listed below, do you personally approve or disapprove of their regular use by an adult?” ‘Cocaine/crack’: strongly approve/approve; neither approve or disapprove; strongly disapprove/disapprove). Remoteness area was determined via the Australian Statistical Geography Standard Remoteness. Addresses were allocated into one of five areas based on distance: major cities (metropolitan), inner regional, outer regional, remote and very remote (non-metropolitan)¹⁷. SES was determined via the Index of Relative Socio-Economic Advantage and Disadvantage^{17, 19}: low (40% greatest level of disadvantage) and high (60% greatest level of advantage). Income was dichotomised based on Australia’s average weekly earnings of \$1,658.70 in November 2019²⁰: below average (\leq \$1,499 pw); and average and above (\geq \$1,500 pw). Kessler’s psychological distress scale scores were categorised as: low (10–15); moderate (16–21); high (22–29); and very high (30–50)^{21, 22}. Alcohol use status was assessed against the 2020 Alcohol Guidelines²³ and categorised according to AIHW procedures²⁴: abstainers (did not use alcohol in the past year); low risk (consumed \leq 10 standard drinks per week (on average) and \leq 4 standard drinks in any one day (averaged over a month)); and risky (consumed above the low risk criteria).

Occupation and industry were the employment characteristics of interest. Occupation responses were classified according to the Australian and New Zealand Standard Classification of Occupations and grouped as: managers; professionals; trade workers; skilled workers; and unskilled workers. Industry responses were classified according to the Australian and New Zealand Standards Industrial Classification. Industry responses were also grouped according to their gender dominance: male dominant ($>$ 70% men); female dominant ($>$ 70% women); and mixed (no single gender representation $>$ 70%).

Analysis

STATA IC15 (StataCorp, College Station, Texas, USA)²⁵ was used for analyses. Data were weighted using the main, or alcohol population weight (see ¹⁸) for weighting information). Frequency analyses and significance testing explored differences in cocaine use by demographics. Regression models determined risk factors for cocaine use (2019) and increased use (2016–2019).

Two multiple logistic regression models were created. Age, sex and year (model 2 only) were entered in the first step, then all other demographic variables were entered using a forward stepwise procedure in the second step. Smoking status and alcohol use status were entered in the third and fourth steps, respectively. The inclusion of year in the

second regression enabled the change in cocaine prevalence between 2016–2019 to be examined.

Results

Prevalence of cocaine use

Employed Australian adult’s cocaine use increased 63% between 2016–2019 (3.8%–6.2%). Cocaine prevalence increased 18%–200% across all demographic subgroups, except among workers from Tasmania (decreased) and the Northern Territory (stabilised). Cocaine use was significantly higher in 2019 among workers who were male, aged 18–24 years, single, New South Wales residents, metropolitan-based, high SES, very highly distressed, currently smoked, drank alcohol at risky levels, approved of cocaine use and from a mixed-gender industry. There were no significant differences in cocaine use by Indigenous status, occupation group, or income level (Table 1).

In 2019, males were 68% more likely to use cocaine than females (OR 1.68, 95%CI 1.36–2.08); single workers were four times more likely to use cocaine than widowed/separated/divorced workers (OR 4.39, 95%CI 2.78–6.91); and workers aged 18–24 years were nine times more likely to use cocaine than 45+ year olds (OR 9.25, 95%CI 6.35–13.47) (Table 1). The odds of using cocaine significantly increased as workers’ levels of psychological distress increased.

Cocaine use differed by state and remoteness area (Table 1). Metropolitan-based workers and New South Wales residents had highest prevalence in 2016 and 2019. However, the difference in use levels between metropolitan and non-metropolitan workers decreased as non-metropolitan workers increased their prevalence by 112% between 2016 and 2019 (fourth largest increase of all subgroups).

Workers who smoked tobacco and drank alcohol at risky levels had higher prevalence than those who did not. Workers who smoked tobacco or drank alcohol at risky levels had four times (OR 3.72, 95%CI 2.97–4.67), and 47 times (OR 46.94, 95%CI 14.77–149.12) higher odds of cocaine use than those who did not use tobacco or alcohol, respectively. The latter large odds ratio is predominately due to alcohol abstainers having the lowest cocaine prevalence of all subgroups explored in 2019 (0.3%) whilst risky alcohol users had the seventh highest (13.7%) (Table 1).

Those who approved of cocaine use had the highest prevalence of all demographic subgroups in both 2016 (29.0%) and 2019 (47.9%); with workers who neither approved nor disapproved of its use having the second highest prevalence (23.8% vs 28.1%). Compared to those who dis-

Table 1. Proportion (weighted) of recent cocaine use among employed Australian adults (18+ years) by key demographic variables in 2016 and 2019, and predictors of cocaine use in 2019 and 2016–2019

	Prevalence of cocaine use		Univariate modelling ¹		Multivariate Modelling		
	2016	2019	2019	2019	2019	2016–2019	2016–2019
	%	%	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Demographics							
Sample size (N)	10,314,859	11,307,191					
Cocaine use ^{†††}	3.8	6.2					
Gender					Step 1		
Male	4.4	7.4	<0.001		1.16 (0.87, 1.53)	1.02 (0.80, 1.29)	0.899
Female	3.2	4.5	rc		rc	rc	rc
Age groups							
18–24 years	7.1	13.9	<0.001		<0.001	<0.001	<0.001
25–34 years	7.6	10.9	9.25 (6.35, 13.47)		5.69 (3.24, 10.02)	5.71 (3.58, 9.09)	5.71 (3.58, 9.09)
35–44 years	4.2	5.9	7.00 (5.13, 9.56)		5.38 (3.73, 7.75)	5.71 (4.13–7.91)	5.71 (4.13–7.91)
45+ years	0.8	1.7	3.61 (2.63, 4.93)		2.75 (1.89, 3.99)	3.05 (2.17, 4.27)	3.05 (2.17, 4.27)
			rc		rc	rc	rc
Survey year							
2016	3.8				-	-	<0.001
2019		6.2					rc
							2.03 (1.62, 2.54)
Marital status					Step 2		
Single	9.0	13.8	<0.001		0.004		<0.001
Married/de facto	2.2	3.8	4.39 (2.78, 6.91)		1.74 (1.26, 2.42)	1.89 (1.45, 2.45)	1.89 (1.45, 2.45)
Widow/separated/divorced	2.5	3.5	1.08 (0.69, 1.69)		1.21 (0.72, 2.02)	1.32 (0.84, 2.09)	1.32 (0.84, 2.09)
			rc				
Aboriginal and/or Torres Strait Islander							
Yes	3.8	4.7	0.522		-	-	-
No	3.8	6.1	rc				
			1.30 (0.58, 2.96)				
State							
New South Wales	5.5	7.4	<0.001		<0.001		<0.001
Victoria	3.8	7.0	4.02 (1.92, 8.44)		3.37 (1.93, 5.89)	3.71 (2.28, 6.06)	3.71 (2.28, 6.06)
Queensland	2.8	5.5	3.82 (1.82, 8.04)		2.87 (1.63, 5.05)	2.64 (1.61, 4.34)	2.64 (1.61, 4.34)
Western Australia	2.0	3.7	2.94 (1.35, 6.40)		2.17 (1.16, 4.07)	1.92 (1.11, 3.33)	1.92 (1.11, 3.33)
South Australia	2.8	3.8	1.93 (0.84, 4.42)		1.81 (0.89, 3.72)	1.40 (0.72, 2.73)	1.40 (0.72, 2.73)
Tasmania	2.7	1.9	2.01 (0.89, 4.54)		1.57 (0.81, 3.04)	1.49 (0.83, 2.66)	1.49 (0.83, 2.66)
			rc		1.38 (0.48, 3.97)	1.92 (0.78, 4.75)	1.92 (0.78, 4.75)
Australian Capital Territory							
Northern Territory	2.0	3.6	1.87 (0.80, 4.37)		rc	rc	rc
Remoteness	3.7	3.7	1.92 (0.84, 4.41)		1.95 (0.82, 4.62)	2.24 (1.01, 5.00)	2.24 (1.01, 5.00)
			<0.001		<0.001	<0.001	<0.001
Metropolitan							
Metropolitan	4.7	6.9	2.00 (1.46, 2.73)		2.30 (1.54–3.45)	2.40 (1.70, 3.38)	2.40 (1.70, 3.38)
Non-metropolitan	1.7	3.6	rc		rc	rc	rc

Table 1. Continued

	Prevalence of cocaine use		Univariate modelling ¹		Multivariate Modelling	
	2016	2019	2019	2019	2019	2016–2019
	%	%	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Demographics						
Socio-economic status ²			0.028		-	-
Low	2.6	5.0	rc			
High	4.5	6.6	1.34 (1.03, 1.74)			
Income ³			0.841		0.010	0.085
Below average	3.8	6.7	rc		rc	rc
Average and above	4.9	6.8	1.02 (0.84, 1.27)		1.40 (1.04, 1.88)	1.26 (0.97, 1.65)
Psychological distress ⁴			<0.001		0.024	0.277
Low	3.0	4.4	rc		rc	rc
Moderate	4.9	8.8	2.11 (1.64, 2.72)		1.61 (1.18, 2.18)	1.24 (0.96, 1.62)
High	7.5	9.4	2.27 (1.63, 3.17)		1.05 (0.67, 1.65)	1.19 (0.83, 1.70)
Very high	6.2	14.0	3.57 (2.29, 5.55)		1.26 (0.74, 2.15)	0.89 (0.55, 1.46)
Attitude towards cocaine use			<0.001		<0.001	<0.001
Approve	29.0	47.9	25.49 (17.94, 36.22)		12.92 (8.46, 19.74)	10.22 (6.94, 15.05)
Neither	23.8	28.1	10.81 (8.29, 14.09)		6.49 (4.68, 8.99)	6.08 (4.69, 7.90)
Disapprove	2.3	3.5	rc		rc	rc
Occupation			0.054			0.326
Managers	4.9	7.1	1.43 (1.00, 2.05)			1.56 (1.00–2.44)
Professionals	4.3	6.1	1.23 (0.91, 1.67)			1.22 (0.80–1.85)
Trade workers	4.4	8.4	1.73 (1.22, 2.46)			1.36 (0.86–2.15)
Skilled workers	3.5	5.0	rc			1.32 (0.88–1.97)
Unskilled workers	2.8	5.7	1.13 (0.77, 1.66)			rc
Industry type ⁵			<0.001			0.062
Male dominant	3.9	6.2	1.78 (1.16, 2.72)			1.40 (0.95–2.08)
Female dominant	1.8	3.6	rc			rc
Mixed	4.3	7.3	2.12 (1.46, 3.08)			1.49 (1.07–2.08)
Current smoking status			<0.001		Step 3	<0.001
Current smoker	8.4	14.9	3.72 (2.97, 4.67)		2.28 (1.69, 3.09)	1.98 (1.53, 2.56)
Non/Ex-smoker	2.9	4.5	rc		rc	rc
Alcohol use ⁶			<0.001		Step 4	<0.001
Abstainer	0.1	0.3	rc		rc	rc
Low risk	1.1	1.8	5.55 (1.71, 18.02)		4.72 (1.44, 15.41)	4.44 (1.42, 13.90)
Risky	8.3	13.7	46.94 (14.77, 149.12)		27.46 (8.62, 87.46)	29.50 (9.62, 90.43)

Data source: Australian Institute of Health and Welfare. National Drug Strategy Household Survey 2016 and 2019: Confidentialised unit record file. Canberra: Available from the Australian Data Archive; 2020.

OR = Odds Ratio; CI = Confidence Interval; rc = reference category.

Table 1. Continued

- ¹ A series of logistic regression models were used to test the association of each demographic variable (included in a separate univariate model) with cocaine use.
- ² Groups based on quintile range: low (1st and 2nd quintile) and high (3rd–5th quintile).
- ³ The average weekly income in Australian in November 2019 was \$1,658. Income groups were dichotomized as below average (\leq \$1,499 pw), and average and above (\$1,500 pw) (Australian Bureau of Statistics, 2020).
- ⁴ Psychological distress scale scores were recategorized as: low (10–15); moderate (16–21); high (22–29); and very high (30–50).
- ⁵ Male-dominant industries (greater than 70% representation of men); female-dominant industries (greater than 70% representation of women); mixed-gender industry (no single gender representation over 70%).
- ⁶ Alcohol use was assessed according to the 2020 National Health and Medical Research Centre's alcohol guidelines and defined as: abstainers (did not consume alcohol in the past year); low risk (consumed 10 or fewer standard drinks per week (on average) and no more than four standard drinks in any one day (averaged over a month)); and risky (consumed more than 10 standard drinks per week (on average) and more than four standard drinks in any one day (averaged over a month)).
- *** Univariate logistic regression model for prevalence of cocaine use over time: significant linear trend for year at $p < 0.001$.

approved of cocaine use, those who approved of its use, or who neither approved nor disapproved of its use, were 25 times (OR 25.49, 95%CI 17.94–36.22) and 11 times (OR 10.81, 95%CI 8.29–14.09) more likely to use it, respectively (Table 1).

In 2019, cocaine prevalence among the industries varied from 0.4%–12.6%. Highest prevalence occurred in Accommodation and Food Services (12.6%), Construction (10.5%) and Professional, Scientific and Technical Services (10.2%) industries (Fig. 1). Workers from male-dominant and mixed-gender industries were 78% and 112% more likely to use cocaine than those in female-dominant industries, respectively (OR 1.78, 95%CI 1.16–2.72; OR 2.12, 95%CI 1.46–3.08).

Predictors of cocaine use: 2019

Predictors of workers' cocaine use in the 2019 regression model were age, marital status, state of residence, remoteness, income, psychological distress, attitude regarding cocaine use, smoking status, and alcohol use status (Table 1).

When all variables were included in the logistic regression model, gender did not predict cocaine use: occupation, industry, SES, and Indigenous status failed to be included in the model. Risky alcohol use emerged as the strongest predictor of cocaine use, albeit to a lesser extent than in the univariate analyses (Table 1). Workers who consumed alcohol at risky levels were 27 times more likely to use cocaine than abstainers (OR 27.46, 95%CI 8.62–87.46).

Those who approved of regular cocaine use were the subgroup with the second highest likelihood of using cocaine (OR 12.92, 95%CI 8.46–19.74). Cocaine use was at least five times more likely among workers aged 18–24 (OR 5.69, 95%CI 3.24–10.02) and 25–34 (OR 5.38, 95%CI 3.73–7.75) years than workers aged 45+ years. New South Wales workers were three times more likely to use cocaine than workers residing in the Australian Capital Territory (OR 3.37, 95%CI 1.93–5.89). Workers who smoked tobacco had higher odds of cocaine use than those who abstained from tobacco (OR 2.28, 95%CI 1.69–3.09) (Table 1).

Although there was no significant difference in cocaine prevalence by income level in the univariate analysis, income predicted cocaine use in the regression model (Table 1). Workers earning at least an average income were 40% more likely to use cocaine in 2019 than workers who earned below the average income (OR 1.40, 95%CI 1.04–1.88). Conversely, SES was significant in the univariate analysis but failed to be included in the regression model.

Workers with moderate psychological distress had the highest odds of cocaine use in 2019 (OR 1.61, 95%CI

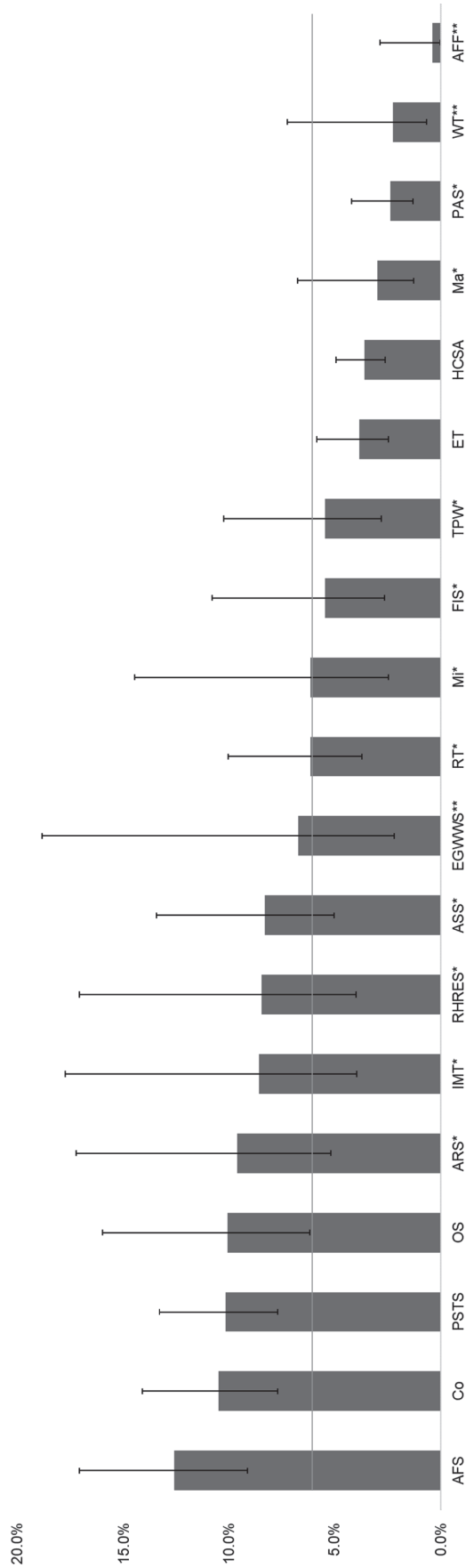


Fig. 1. Prevalence of cocaine use among employed Australians (18+ years) by industry of employment, 2019.
 Data source: Australian Institute of Health and Welfare. National Drug Strategy Household Survey 2019: Confidentialised unit record file. Canberra: Available from the Australian Data Archive; 2020.

AFS = Accommodation and Food Services; Co = Construction; PSTS = Professional, Scientific and Technical Services; OS = Other Services; ARS = Arts and Recreation Services; IMT = Information Media and Telecommunications; RHRES = Rental, Hiring and Real Estate Services; ASS = Administrative and Support Services; EGWWS = Electricity, Gas, Water and Waste Services; RT = Retail Trade; Mi = Mining; FIS = Financial and Insurance Services; TPW = Transport, Postal and Warehousing; ET = Education and Training; HCSA = Health Care and Social Assistance; Ma = Manufacturing; PAS = Public Administration and Safety; WT = Wholesale Trade; AFF = Agriculture, Forestry and Fishing.
 * Estimate has a relative standard error of 25% to 50% and should be used with caution; ** Estimate has a relative standard error greater than 50% and is considered too unreliable for general use.

— Employed Australian's cocaine prevalence (6.2%)
 I 95% upper and lower confidence intervals

1.18–2.18) compared to workers with low distress (Table 1). Conversely, there was no significant difference in cocaine use for highly and very highly distressed workers compared to low psychologically distressed workers (OR 1.05, 95%CI 0.67–1.65; OR 1.26, 95%CI 0.71–2.15, respectively). This pattern differed from that observed in the univariate analysis (Table 1).

Predictors of increased cocaine use: 2016–2019

Predictors of increased cocaine use between 2016–2019 amongst employed Australians were similar to the predictors found for cocaine use in 2019: age, marital status, state, remoteness, attitude, smoking status, and alcohol use status. The exceptions were that psychological distress and income were not significant predictors of increasing cocaine use, whilst year was (2019: OR 2.03, 95%CI 1.62–2.54) (Table 1).

Discussion

Employed Australian's cocaine use increased significantly to an unprecedented 6.2% between 2016–2019, and to 13.9% among workers aged 18–24 years. This trend is consistent with global upward trajectories for cocaine use^{3, 26)} and warrants the need to implement effective cocaine prevention and intervention efforts in the workplace. Numerous employed subgroups whose cocaine use notably increased over time were identified through multivariate logistic regression modelling. Workers most at-risk (and thus require targeted attention) were those who drank alcohol at risky levels, held a favourable attitude towards cocaine use, and were aged 18–34 years. Other at-risk groups were single workers, New South Wales residents, workers in metropolitan locations and workers who smoked tobacco.

Alcohol and tobacco use

A very strong association was found between risky alcohol use and increased likelihood of cocaine use. Current tobacco use was also associated with cocaine prevalence. Consistent with previous literature²⁶⁾, these findings highlight the importance of comprehensive intervention, prevention and health promotion approaches that incorporate poly-substance use. The current findings also indicate that patterns of related behaviours co-occur and may be driven by similar motivators. For example, both cocaine and alcohol are mostly consumed in social settings. Thus, cocaine use is likely to occur in settings conducive to both drinking and cocaine use and is therefore more concentrated among

people who are risky drinkers. However, as a stimulant, it may also serve functional purposes in some workplace settings – an issue worthy of attention in itself.

Age

Workers aged 18–24 years were found to be the age group most at-risk of cocaine use. Cocaine use also remained high between 25–34 years but tapered off after 45 years. These findings reflect age of initiation data where 20–24 year olds are most susceptible to first use^{5, 27)} and a negligible probability of cocaine initiation after 40 years of age²⁷⁾. It is thus important for workplace health promotion and prevention efforts to target those in their early twenties, with cessation efforts directed towards workers in their twenties and thirties.

Later age of initiation for cocaine may be related to supply barriers¹⁾. Compared to cannabis, cocaine has been traditionally more expensive, harder to access, and less readily available^{1, 28)}. Consequently, younger workers may opt to use more accessible drugs rather than make an active choice to delay use of cocaine²⁷⁾. Recent studies however have shown that cocaine availability is increasing and becoming easier to obtain in Australia⁷⁾ and elsewhere²⁹⁾. Thus, uptake among younger workers may increase and should be monitored in the future, particularly given the slight albeit non-significant reduction in age of cocaine initiation between 2016–2019 (23.9 vs 23.6 years)⁵⁾.

Gender

Mixed results were found regarding the relationship between gender and cocaine use. The cocaine-related gender gap widened between 2016–2019, despite past research indicating that it was decreasing prior to 2016^{14, 26)}. The gender gap widened again due to marked increases in cocaine use amongst male workers, a pattern consistent elsewhere⁸⁾. Increased prevalence amongst males may reflect changing norms and values regarding males' use of cocaine^{30, 31)} whereby cocaine use has become more acceptable in certain working environments. The present study however did not find that gender predicted cocaine use in the regression model. One explanation for this finding is that factors such as risky alcohol use - which is more common among males and had a substantially higher odds of predicting cocaine use – may be mediating the association between gender and cocaine use. Further research is warranted to investigate the potential mediating effect of risky alcohol use on cocaine prevalence among workers.

Psychological distress

Another anomalous finding which requires further research concerns the association between cocaine use and psychological distress. Although cocaine use increased as a worker's level of psychological distress increased in the univariate analyses, this pattern did not continue in multiple logistic regression modelling. Instead, workers with moderate levels of psychological distress had significantly higher odds of cocaine use in 2019; whilst psychological distress failed to predict increasing cocaine prevalence over time. These findings suggest that increased cocaine use is occurring among workers as part of their normal social activities and is not associated with stress management, self-medication or mental health issues. This finding has important health promotion and prevention implications and suggests that approaches should be centred around non-pathologised, pro-social patterns of use, and to a lesser extent the needs of workers with severe mental health problems.

The work environment

Although cocaine use among workers has increased significantly, similar increases have not occurred amongst most segments of society⁵). Factors related to specific employment and workplace conditions may be conducive to increased cocaine use. The environment and cultural norms of an employee's workplace can encourage or discourage drug taking behaviour^{30, 32}). Evidence suggests that the working environment may facilitate cocaine use through availability, descriptive norms (where others are aware of co-workers' drug use), and injunctive norms (co-workers' opinions regarding drug use)^{33, 34}). As cocaine is an emerging drug of concern (reflected by increased prevalence 2016–2019), questions arise regarding the role Australian workplace substance use climates may play in its uptake³⁰) with scope to address workplace drug use cultures.

Fitness for work

Employed Australians increasing cocaine use is concerning given the potential health and safety implications^{7, 10, 11}). Cocaine can impact a worker's physical and mental wellbeing, increase the risk of workplace accidents and injuries, and thus compromise a worker's fitness for work. Increasing prevalence may also result in increased cocaine use disorders and other associated harms. Cocaine-related treatment episodes in the general Australian population doubled between 2015/16–2018/19 (0.3%–0.8%)³⁵). As growth in treatment demand was greater than the increase in preva-

lence during the same period, it appears that there may be a disproportionate level of harm that outstrips the level of use, or a delayed effect. Hence, decreasing cocaine use and uptake is paramount to reducing harms, treatment demand and the costs to society, including costs accrued by the workplace.

Workplace interventions, policies and programs

Interventions, policies and programs are needed that can rapidly respond to changing drug trends³⁰). The results of the present study show further support that the workplace is a powerful setting to instigate cocaine health promotion, prevention and intervention efforts. Potential strategies include targeting social norms within the workplace culture, and provision of health and safety training with a strong focus on risks associated with one's own, and co-workers', drug use. Particular attention regarding demographic groups most at-risk (e.g., new, young workers who may be more susceptible to adopting workplace cultural norms³⁰) is warranted.

Workplace alcohol and other drug (AOD) policies are associated with reduced odds of drug use³⁶). Workers who use drugs at high levels are more likely to reduce/cease use if their workplace has implemented an AOD policy. Therefore, to address cocaine use among workers, AOD policy implementation is an effective strategy to reduce the negative health impacts and workplace costs associated with cocaine use³⁶).

Workplaces can tackle increased cocaine and other drug use through clearer drug policies. Popular strategies such as random drug testing have proven to have limited effectiveness for drugs such as cocaine that have a very short half-life, among other limitations of drug testing. However, workplace health promotion approaches that entail better communication regarding safety, health, wellbeing, and convey balanced information about the short- and long-term impacts of cocaine use are more likely to be effective deterrent and harm reduction strategies^{37, 38}). Attempting to change attitudes regarding the social acceptability of cocaine use may also help reduce use.

Limitations

Caution may be required when interpreting findings due to study limitations. The NDSHS is a self-report survey, therefore social desirability response bias may have occurred. Since cocaine use is illegal, some respondents may have underreported their use. As cocaine use is commonly associated with alcohol and tobacco use, cocaine may be underestimated if those with alcohol-/tobacco-related poor

health declined participation. Thus, cocaine use may be higher than reported. However, as such biases are likely to be consistent over time, trend analyses should not be impacted¹⁷.

Conclusion

Employed Australian's cocaine use is increasing with workers who drink at risky levels, approve of cocaine use, and aged 18–24 years most vulnerable. Cocaine can impact worker's fitness for work, increase safety risks and impair physical and mental health. Permissive workplace cultures and targeting identified subgroups most susceptible to use require particular attention. Workplaces are well-placed to address cocaine use through implementing effective cocaine-relevant policies, health promotion, prevention and intervention strategies. In doing so, workers' health and wellbeing can be safeguarded, and associated workplace costs substantially reduced.

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